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      Yu, Guo-Liang
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Val Phe Thr Ala Thr Thr Lys Pro Val Ala Ser Ala Phe Val Ser Thr 85 90 95

Val Gly Ser Ala Tyr Ala Lys Lys Thr Val Glu Ser Ala Glu Gln Ala 100 105 110

Glu Lys Ser Ser Lys Arg Lys Arg Lys Asn Gln Tyr Arg Gly Ile Arg 115 120 125

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Lys Ser Val Thr Leu Val Gln Gln Pro Thr His Leu Ser Gln Gln Tyr 210 215 220

Cys Asn Asn Ser Phe Asp Asn Ser Phe Gly Asp Met Ser Phe Met Glu 225 230 235 240

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Pro Leu Glu Val Glu Ala Met Leu Gly Ala Asp Ala Gly Ala Val Thr 340 345 350

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Ala Glu Asn Asp Ile Leu Arg Ala Gln Val Leu Glu Leu Asn His Arg 100 105 110

Leu Gln Ser Leu Asn Glu Ile Val Asp Phe Val Glu Ser Ser Ser Ser 115 120 125

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Arg Glu Ala Arg Tyr Ala Phe Gln Thr Arg Ser Gln Val Asp Ile Leu
Asp Asp Gly Tyr Arg Trp Arg Lys Tyr Gly Gln Lys Ala Val Lys Asn
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Asn Pro Phe Pro Arg Ser Tyr Tyr Lys Cys Thr Glu Glu Gly Cys Arg
Val Lys Lys Gln Val Gln Arg Gln Trp Gly Asp Glu Gly Val Val Val
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                                                    110
Thr Thr Tyr Gln Gly Val His Thr His Ala Val Asp Lys Pro Ser Asp
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120

125

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acttactagg agaatcggag ccgatactca gtgagtcgac agcgagttcg gttactcaat 180
cttgtgtaac cggtcagagc attaaacgg tgtacggacg aaaccctagc tttagcaaac 240
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                             40
Pro Val Tyr Gly Arg Asn Pro Ser Phe Ser Lys Leu Tyr Pro Cys Phe
Thr Glu Ser Trp Gly Asp Leu Pro Leu Lys Glu Asn Asp Ser Glu Asp
                     70
                                         75
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Met Leu Val Tyr Gly Ile Leu Asn Asp Ala Phe His Gly Gly Trp Glu Pro Ser Ser Ser Ser Ser Asp Glu Asp Arg Ser Ser Phe Pro Ser Val Lys Ile Glu Thr Pro Glu Ser Phe Ala Ala Val Asp Ser Val Pro Val Lys Lys Glu Lys Thr Ser Pro Val Ser Ala Ala Val Thr Ala Ala Lys 135 Gly Lys His Tyr Arg Gly Val Arg Gln Arg Pro Trp Gly Lys Phe Ala Ala Glu Ile Arg Asp Pro Ala Lys Asn Gly Ala Arg Val Trp Leu Gly 170 Thr Phe Glu Thr Ala Glu Asp Ala Ala Leu Ala Tyr Asp Arg Ala Ala 185 Phe Arg Met Arg Gly Ser Arg Ala Leu Leu Asn Phe Pro Leu Arg Val 200 Asn Ser Gly Glu Pro Asp Pro Val Arg Ile Lys Ser Lys Arg Ser Ser 215 220 Phe Ser Ser Asn Glu Asn Gly Ala Pro Lys Lys Arg Arg Thr Val 230 235 Ala Ala Gly Gly Met Asp Lys Gly Leu Thr Val Lys Cys Glu Val 245 250 Val Glu Val Ala Arg Gly Asp Arg Leu Leu Val Leu 260 265 <210> 19 <211> 822 <212> DNA <213> Arabidopsis thaliana <220> <223> G1241 <400> 19 aagetgacte tageagatet ggtacegteg acceaegegt cegetettee ettatettet 60 tettatacce ttegaceaac gaagaaceet agaaategat taacaagatg aatagggaaa 120 agttgatgaa gatggctaac actgtccgca ctggcggaaa ggggacagta agaaqaaaqa 180 agaaggctgt tcacaagacc actacaaccg atgacaagag gctccaqaqc actcttaaqa 240 gagttggagt caattccatt cccgccattg aagaagttaa catttttaag gatgatgtag 300 tcattcagtt cattaaccct aaagttcaag cttcaattgc tgctaacaca tgggttgtga 360

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Thr Thr Asp Asp Lys Arg Leu Gln Ser Thr Leu Lys Arg Val Gly Val
35 40 45

Asn Ser Ile Pro Ala Ile Glu Glu Val Asn Ile Phe Lys Asp Asp Val
50 60

Val Ile Gln Phe Ile Asn Pro Lys Val Gln Ala Ser Ile Ala Ala Asn 65 70 75 80

Thr Trp Val Val Ser Gly Thr Pro Gln Thr Lys Lys Leu Gln Asp Ile 85 90 95

Leu Pro Gln Ile Ile Ser Gln Leu Gly Pro Asp Asn Leu Asp Asn Leu 100 105 110

Arg Lys Leu Ala Glu Gln Phe Gln Lys Gln Ala Pro Gly Ala Gly Asp 115 120 125

Val Pro Ala Thr Ile Gln Glu Glu Asp Asp Asp Asp Val Pro Asp 130 135 140

Leu Val Val Gly Glu Thr Phe Glu Thr Pro Ala Thr Glu Glu Ala Pro 145 150 155 160

Lys Ala Ala Ser

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20 25 30

Ala Ser Ala Ala Asp Asp Phe Trp Gly Phe Tyr Ser Thr Ser Lys Leu 35 40 45

His Pro Thr Asn Gln Val Asn Val Lys Glu Glu Ala Val Lys Glu
50 60

Gln Ala Thr Glu Pro Gly Lys Arg Arg Lys Arg Lys Asn Val Tyr Arg 65 70 75 80

Gly Ile Arg Lys Arg Pro Trp Gly Lys Trp Ala Ala Glu Ile Arg Asp 85 90 95

Pro Arg Lys Gly Val Arg Val Trp Leu Gly Thr Phe Asn Thr Ala Glu 100 105 110

Glu Ala Ala Met Ala Tyr Asp Val Ala Ala Lys Gln Ile Arg Gly Asp 115 120 125

Lys Ala Lys Leu Asn Phe Pro Asp Leu His His Pro Pro Pro Pro Asn 130 135 140

Tyr Thr Pro Pro Pro Ser Ser Pro Arg Ser Thr Asp Gln Pro Pro Ala 145 150 155 160

Lys Lys Val Cys Val Val Ser Gln Ser Glu Ser Glu Leu Ser Gln Pro 165 170 Ser Phe Pro Val Glu Cys Ile Gly Phe Gly Asn Gly Asp Glu Phe Gln 185 Asn Leu Ser Tyr Gly Phe Glu Pro Asp Tyr Asp Leu Lys Gln Gln Ile Ser Ser Leu Glu Ser Phe Leu Glu Leu Asp Gly Asn Thr Ala Glu Gln Pro Ser Gln Leu Asp Glu Ser Val Ser Glu Val Asp Met Trp Met Leu 230 235 Asp Asp Val Ile Ala Ser Tyr Glu 245 <210> 23 <211> 914 <212> DNA <213> Arabidopsis thaliana <220> <223> G503 <400> 23 gaacatcaaa aactaacaca cagaaagaaa aaaaacagtt cctgttccat tagattcttt 60 tctaaattgt ctgaaaatca tggaagtaac ttcccaatct accetccetc cagggttccg 120 atttcatcct accgacgaag aactcatcgt ttactatctc cgaaaccaga ccatgtctaa 180 accatgccct gtctccatca tcccagaagt tgatatctac aaattcgacc catggcaatt 240 acccgagaaa acagagtttg gagaaaatga gtggtatttc ttcagcccta gagaaagaaa 300 atatecaaac ggagteagac caaaceggge agetgtttee ggttattgga aageaacegg 360 tacagacaaa gccattcaca gcggttcgag taacgtaggt gtcaagaaag ctctcgtctt 420 ctacaaaggt agacctccta aaggaatcaa aactgactgg atcatgcatg agtatcgtct 480 ccatgattca cgtaaagcat caacgaaacg tagcggatct atgaggttag atgaatgggt 540 actatgtagg atatacaaga agagaggagc aagtaagctt ctgaatgagc aagagggttt 600 catggacgaa gtactaatgg aggatgagac caaagttgtt attaacgaag cagagagaag 660 aaatgatgaa gagataatga tgatgacgtc gatgaaactt ccaaggacgt gttcgctggc 720 tcatttgttg gaaatggatt acatgggacc cgtctctcac attgataatt ttagtcagtt 780 cgatcatctt catcaacctg attcggagtc tagttggttc ggggatctac agtttaacca 840 agacgagatc ttaaaccatc atcgtcaagc tatgtttaag ttttagtgat ggggtcagta 900 aaaaaaaaa aaaa <210> 24 <211> 268 <212> PRT <213> Arabidopsis thaliana <220> <223> G503 <400> 24 Met Glu Val Thr Ser Gln Ser Thr Leu Pro Pro Gly Phe Arg Phe His 10

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Phe Asp Pro Trp Gln Leu Pro Glu Lys Thr Glu Phe Gly Glu Asn Glu 50 55 60

Trp Tyr Phe Phe Ser Pro Arg Glu Arg Lys Tyr Pro Asn Gly Val Arg 65 70 75 80

Pro Asn Arg Ala Ala Val Ser Gly Tyr Trp Lys Ala Thr Gly Thr Asp 85 90 95

Lys Ala Ile His Ser Gly Ser Ser Asn Val Gly Val Lys Lys Ala Leu 100 105 110

Val Phe Tyr Lys Gly Arg Pro Pro Lys Gly Ile Lys Thr Asp Trp Ile 115 120 125

Met His Glu Tyr Arg Leu His Asp Ser Arg Lys Ala Ser Thr Lys Arg 130 135 140

Ser Gly Ser Met Arg Leu Asp Glu Trp Val Leu Cys Arg Ile Tyr Lys 145 150 155 160

Lys Arg Gly Ala Ser Lys Leu Leu Asn Glu Gln Glu Gly Phe Met Asp 165 170 175

Glu Val Leu Met Glu Asp Glu Thr Lys Val Val Ile Asn Glu Ala Glu 180 185 190

Arg Arg Asn Asp Glu Glu Ile Met Met Met Thr Ser Met Lys Leu Pro 195 200 205

Arg Thr Cys Ser Leu Ala His Leu Leu Glu Met Asp Tyr Met Gly Pro 210 215 220

Val Ser His Ile Asp Asn Phe Ser Gln Phe Asp His Leu His Gln Pro 225 230 235 240

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Phe Ala Lys Asp Leu Leu Pro Gln Tyr Phe Lys His Asn Asn Phe Ser 50 55 60

Ser Phe Ile Arg Gln Leu Asn Thr Tyr Gly Phe Arg Lys Thr Val Pro 65 70 75 80

Asp Lys Trp Glu Phe Ala Asn Asp Tyr Phe Arg Arg Gly Glu Asp 85 90 95

Leu Leu Thr Asp Ile Arg Arg Lys Ser Val Ile Ala Ser Thr Ala
100 105 110

Gly Lys Cys Val Val Gly Ser Pro Ser Glu Ser Asn Ser Gly Gly
115 120 125

Gly Asp Asp His Gly Ser Ser Ser Thr Ser Ser Pro Gly Ser Ser Lys 130 135 140

Asn Pro Gly Ser Val Glu Asn Met Val Ala Asp Leu Ser Gly Glu Asn 145 150 155 Glu Lys Leu Lys Arg Glu Asn Asn Leu Ser Ser Glu Leu Ala Ala 170 Ala Lys Lys Gln Arg Asp Glu Leu Val Thr Phe Leu Thr Gly His Leu 190 Lys Val Arg Pro Glu Gln Ile Asp Lys Met Ile Lys Gly Gly Lys Phe Lys Pro Val Glu Ser Asp Glu Glu Ser Glu Cys Glu Gly Cys Asp Gly 215 Gly Gly Gly Ala Glu Glu Gly Val Gly Glu Gly Leu Lys Leu Phe Gly Val Trp Leu Lys Gly Glu Arg Lys Lys Arg Asp Arg Asp Glu Lys Asn 245 250 Tyr Val Val Ser Gly Ser Arg Met Thr Glu Ile Lys Asn Val Asp Phe His Ala Pro Leu Trp Lys Ser Ser Lys Val Cys Asn <210> 27 <211> 1130 <212> DNA <213> Arabidopsis thaliana <220> <223> G291 <220> <223> "n" bases at various positions throughout the sequence may be A, T, C, G, other or unknown <400> 27 ccaagatcga ctcttacttc gaatctctct caactttctt cctcagctta cgggaacttc 60 cacacatata catccacaag aacccatatc gaagattcat cctacatata tttacatgga 120 teagtactea teetettigg tegatactte attagatete actattiggeg tractegtat 180 gcgagttgaa gaagatccac cgacaagtgc tttggtggaa gaattaaacc gagttagtgc 240 tgagaacaag aagctctcgg agatgctaac tttgatgtgt gacaactaca acgtcttgag 300 gaagcaactt atggaatatg ttaacaagag caacataacc gagagggatc aaatcagccc 360 teccaagaaa egeaaateee eggegagaga ggaegeatte agetgegegg ttattggegg 420 agtgtcggag agtagctcaa cggatcaaga tgagtatttg tgtaagaagc agagagaaga 480 gactgtcgtg aaggagaaag tctcaagggt ctattacaag accgaagctt ctgacactac 540 cctcgttgtg aaagatgggt atcaatggag gaaatatgga cagaaagtga ctagagacaa 600 tccatctcca agagcttact tcaaatgtgc ttgtgctcca agctgttctg tcaaaaagaa 660 ggttcagaga agtgtggagg atcagtccgt gttagttgca acttatgagg gtgaacacaa 720

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<211> 302

<212> PRT

<213> Arabidopsis thaliana

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Leu Val Glu Glu Leu Asn Arg Val Ser Ala Glu Asn Lys Lys Leu Ser 35 40 45

Glu Met Leu Thr Leu Met Cys Asp Asn Tyr Asn Val Leu Arg Lys Gln
50 55 60

Leu Met Glu Tyr Val Asn Lys Ser Asn Ile Thr Glu Arg Asp Gln Ile 65 70 75 80

Ser Pro Pro Lys Lys Arg Lys Ser Pro Ala Arg Glu Asp Ala Phe Ser 85 90 95

Cys Ala Val Ile Gly Gly Val Ser Glu Ser Ser Ser Thr Asp Gln Asp 100 105 110

Glu Tyr Leu Cys Lys Lys Gln Arg Glu Glu Thr Val Val Lys Glu Lys 115 120 125

Val Ser Arg Val Tyr Tyr Lys Thr Glu Ala Ser Asp Thr Thr Leu Val 130 135 140

Val Lys Asp Gly Tyr Gln Trp Arg Lys Tyr Gly Gln Lys Val Thr Arg 145 150 155 160

Asp Asn Pro Ser Pro Arg Ala Tyr Phe Lys Cys Ala Cys Ala Pro Ser 165 170 175

Cys Ser Val Lys Lys Val Gln Arg Ser Val Glu Asp Gln Ser Val 180 185 190

Leu Val Ala Thr Tyr Glu Gly Glu His Asn His Pro Met Pro Ser Gln
195 200 205

Ile Asp Ser Asn Asn Gly Leu Asn Arg His Ile Ser His Gly Gly Ser 210 215 220

Ala Ser Thr Pro Val Ala Ala Asn Arg Arg Ser Ser Leu Thr Val Pro 225 230 235 240

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Val Thr Thr Val Asp Met Ile Glu Ser Lys Lys Val Thr Ser Pro Thr
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Ser Arg Ile Asp Phe Pro Gln Val Gln Lys Leu Leu Val Glu Gln Met
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<211> 173
<212> PRT
<213> Arabidopsis thaliana
<220>
<223> G1275
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His Ser Val Phe Glu Phe Pro Glu Leu Asp Leu Ser Asp Glu Trp Met
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                                25
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Tyr Gln Thr Ser Asp Val Ala Gly Ala Leu Phe Ser Gly Ser Ser Ser
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Cys Phe Ser His Pro Glu Ser Pro Ser Thr Lys Thr Tyr Val Ala Ala 80

Thr Ala Thr Ala Ser Ala Asp Asn Gln Asn Lys Lys Glu Lys Lys 95

Ile Lys Gly Arg Val Ala Phe Lys Thr 105

Asp Asp Gly Phe Lys Trp Arg Lys Tyr Gly Lys Lys Met Val Lys Asn 115

Ser Pro His Pro Arg Asn Tyr Tyr Lys Cys Ser Val Asp Gly Cys Pro 130

Val Lys Lys Arg Val Glu Arg Asp Asp Arg Asp Asp Pro Ser Phe Val Ile 160

Thr Thr Tyr Glu Gly Ser His Asn His Ser Ser Met Asn 170

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<212> DNA
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<223> G242
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Cys Asn Gln Leu Ser Pro Gln Val Glu His Arg Pro Phe Ser Ala Glu
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Glu Asp Glu Thr Ile Ala Arg Ala His Ala Gln Phe Gly Asn Lys Trp 65 70 75 80

Ala Thr Ile Ala Arg Leu Leu Asn Gly Arg Thr Asp Asn Ala Val Lys
85 90 95

Asn His Trp Asn Ser Thr Leu Lys Arg Lys Cys Gly Gly Tyr Asp His 100 105 110

Arg Gly Tyr Asp Gly Ser Glu Asp His Arg Pro Val Lys Arg Ser Val 115 120 125

Ser Ala Gly Ser Pro Pro Val Val Thr Gly Leu Tyr Met Ser Pro Gly 130 135 140

Ser Pro Thr Gly Ser Asp Val Ser Asp Ser Ser Thr Ile Pro Ile Leu 145 150 155 160

Pro Ser Val Glu Leu Phe Lys Pro Val Pro Arg Pro Gly Ala Val Val 165 170 175

Leu Pro Leu Pro Ile Glu Thr Ser Ser Phe Ser Asp Asp Pro Pro Thr 180 185 190

Ser Leu Ser Leu Pro Gly Ala Asp Val Ser Glu Glu Ser Asn 195 200 205

Arg Ser His Glu Ser Thr Asn Ile Asn Asn Thr Thr Ser Ser Arg His 210 215 220

Asn His Asn Asn Thr Val Ser Phe Met Pro Phe Ser Gly Gly Phe Arg 225 230 235

Gly Ala Ile Glu Glu Met Gly Lys Ser Phe Pro Gly Asn Gly Glu 245 250 255

Phe Met Ala Val Val Glu Glu Met Ile Lys Ala Glu Val Arg Ser Tyr
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Pro Leu Lys Glu Asn Asp Ser Glu Asp Met Leu Val Tyr Gly Leu Leu
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Ser Asp Glu Ala Glu Glu Gln Thr Asn Asn Ile Ile Asn Glu
Arg Lys Gln Arg Arg Met Ile Ser Asn Arg Glu Ser Ala Arg Arg Ser
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Arg Met Arg Lys Gln Arg His Leu Asp Glu Leu Trp Ser Gln Val Met
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Trp Leu Arg Ile Glu Asn His Gln Leu Leu Asp Lys Leu Asn Asn Leu
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Ser Glu Ser His Asp Lys Val Leu Gln Glu Asn Ala Gln Leu Lys Glu
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Pro Trp Glu Leu Pro Gly Leu Ala Leu Tyr Gly Glu Lys Glu Trp Tyr 50 55 60

Phe Phe Ser Pro Arg Asp Arg Lys Tyr Pro Asn Gly Ser Arg Pro Asn 65 70 75 80

Arg Ser Ala Gly Ser Gly Tyr Trp Lys Ala Thr Gly Ala Asp Lys Pro 85 90 95

Ile Gly Leu Pro Lys Pro Val Gly Ile Lys Lys Ala Leu Val Phe Tyr 100 105 110

Ala Gly Lys Ala Pro Lys Gly Glu Lys Thr Asn Trp Ile Met His Glu 115 120 125

Tyr Arg Leu Ala Asp Val Asp Arg Ser Val Arg Lys Lys Asn Ser 130 135 140

Leu Arg Leu Asp Asp Trp Val Leu Cys Arg Ile Tyr Asn Lys Lys Gly
145 150 155 160

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Ala Arg Ser Ser Gly Leu Lys Arg Thr Gly Lys Ser Cys Arg Leu Arg
50 55 60

Trp Leu Asn Tyr Leu Arg Pro Asp Val Arg Arg Gly Asn Ile Thr Leu 65 70 75 80

Glu Glu Gln Phe Met Ile Leu Lys Leu His Ser Leu Trp Gly Asn Arg 85 90 95

Trp Ser Lys Ile Ala Gln Tyr Leu Pro Gly Arg Thr Asp Asn Glu Ile 100 105 110

Lys Asn Tyr Trp Arg Thr Arg Val Gln Lys Gln Ala Lys His Leu Arg 115 120 125

Cys Asp Val Asn Ser Asn Leu Phe Lys Glu Thr Met Arg Asn Val Trp 130 135 140

Met Pro Arg Leu Val Glu Arg Ile Asn Ala Gln Ser Leu Pro Thr Thr 145 150 155 160

Cys Glu Gln Val Glu Ser Met Ile Thr Asp Pro Ser Gln Pro Val Asn 165 170 175

Glu Pro Ser Pro Val Glu Pro Gly Phe Val Gln Phe Ser Gln Asn His 180 185 190

His Gln Gln Phe Val Pro Ala Thr Glu Leu Ser Ala Thr Ser Ser Asn 195 200 205

Ser Pro Ala Glu Thr Phe Ser Asp Val Arg Gly Gly Val Val Asn Gly 210 215 220

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Gly Met Trp Lys Thr Pro Ala Glu Arg Cys Phe Leu Trp Leu Gly Gly 180 185 190

Phe Arg Ser Ser Glu Leu Leu Lys Leu Ile Ala Cys Gln Leu Glu Pro 195 200 205

Leu Thr Glu Gln Gln Ser Leu Asp Ile Asn Asn Leu Gln Gln Ser Thr 210 215 220

Gln Gln Ala Glu Asp Ala Leu Ser Gln Gly Met Asp Asn Leu Gln Gln 225 230 235 240

Ser Leu Ala Asp Thr Leu Ser Ser Gly Thr Leu Gly Ser Ser Ser Ser 245 250 255

Gly Asn Val Ala Ser Tyr Met Gly Gln Met Ala Met Ala Met Gly Lys 260 265 270

Leu Gly Thr Leu Glu Gly Phe Ile Arg Gln Ala Asp Asn Leu Arg Leu
275 280 285

Gln Thr Tyr Gln Gln Met Val Arg Leu Leu Thr Thr Arg Gln Ser Ala 290 295 300

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75

90

Pro Leu Pro Pro Leu Pro Ser Arg Ala Ser Pro Ser Asp His Arg Asp

85

Tyr Lys Cys Thr Val Cys Gly Lys Ser Phe Ser Ser Tyr Gln Ala Leu 105 Gly Gly His Lys Thr Ser His Arg Lys Pro Thr Asn Thr Ser Ile Thr 115 120 Ser Gly Asn Gln Glu Leu Ser Asn Asn Ser His Ser Asn Ser Gly Ser Val Val Ile Asn Val Thr Val Asn Thr Gly Asn Gly Val Ser Gln Ser 150 155 Gly Lys Ile His Thr Cys Ser Ile Cys Phe Lys Ser Phe Ala Ser Gly Gln Ala Leu Gly Gly His Lys Arg Cys His Tyr Asp Gly Gly Asn Asn 185 Gly Asn Gly Asn Gly Ser Ser Asn Ser Val Glu Leu Val Ala Gly 200 Ser Asp Val Ser Asp Val Asp Asn Glu Arg Trp Ser Glu Glu Ser Ala Ile Gly Gly His Arg Gly Phe Asp Leu Asn Leu Pro Ala Asp Gln Val 235 Ser Val Thr Thr Ser 245 <210> 45 <211> 1001 <212> DNA <213> Arabidopsis thaliana <220> <223> G1352 <400> 45 gegegattaa aaacteteaa ettttetete aaatttetga teetttgate caacagttag 60 aagaagatte atetgateat ggeeetegaa gegatgaaca etecaaette ttettteace 120 agaatcgaaa cgaaagaaga tttgatgaac gacgccgttt tcattgagcc gtggcttaaa 180 cgcaaacgct ccaaacgtca gcgttctcac agcccttctt cgtcttcttc ctcaccgcct 240 cgatctcgac ccaaatccca gaatcaagat cttacggaag aagagtatct cgctctttgt 300 ctcctcatgc tcgctaaaga tcaaccgtcg caaacgcgat ttcatcaaca gtcgcaatcg 360 ttaacgccgc cgccagaatc aaagaacctt ccgtacaagt gtaacgtctg tgaaaaagcg 420 tttccttcct atcaggettt aggeggtcae aaagcaagte accgaatcaa accaccaace 480 gtaateteaa caacegeega tgatteaaca geteegaeea teteèategt egeeggagaa 540 aaacatccga ttgctgcctc cggaaagatc cacgagtgtt caatctgtca taaagtgttt 600 ccgacgggtc aagetttagg cggtcacaaa cgttgtcact acgaaggcaa cctcggcggc 660 ggaggaggag gaggaagcaa atcaatcagt cacagtggaa gcgtgtcgag cacggtatcg 720 gaagaaagga gccaccgtgg attcatcgat ctaaacctac cggcgttacc tgaactcagc 780 cttcatcaca atccaatcgt cgacgaagag atcttgagtc cgttgaccgg taaaaaaccg 840 cttttgttga ccgatcacga ccaagtcatc aagaaagaag atttatcttt aaaaatctaa 900 tactcgacta ttaattcttg tgtgattttt ttcgttacaa ccatagtttc attttcattt 960 ttttagttac aaatttttaa ttgttctgat ttggattgaa a 1001 <210> 46
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Ser Ser Ser Pro Pro Arg Ser Arg Pro Lys Ser Gln Asn Gln Asp 50 55 60

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Asp Gln Pro Ser Gln Thr Arg Phe His Gln Gln Ser Gln Ser Leu Thr 85 90 95

Pro Pro Pro Glu Ser Lys Asn Leu Pro Tyr Lys Cys Asn Val Cys Glu 100 105 110

Lys Ala Phe Pro Ser Tyr Gln Ala Leu Gly Gly His Lys Ala Ser His 115 120 125

Arg Ile Lys Pro Pro Thr Val Ile Ser Thr Thr Ala Asp Asp Ser Thr 130 135 140

Ala Pro Thr Ile Ser Ile Val Ala Gly Glu Lys His Pro Ile Ala Ala 145 150 155 160

Ser Gly Lys Ile His Glu Cys Ser Ile Cys His Lys Val Phe Pro Thr 165 170 175

Gly Gln Ala Leu Gly Gly His Lys Arg Cys His Tyr Glu Gly Asn Leu 180 185 190

Gly Gly Gly Gly Gly Gly Ser Lys Ser Ile Ser His Ser Gly Ser

Val Ser Ser Thr Val Ser Glu Glu Arg Ser His Arg Gly Phe Ile Asp 210 215 220

Leu Asn Leu Pro Ala Leu Pro Glu Leu Ser Leu His His Asn Pro Ile 225 230 235 240

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Pro Thr Ala Ile Ser Pro Pro Leu Pro Ser Ser Thr Ala Pro Val Ser 85 90 95

Asn Ser Thr Ala Ser Ser Ser Ser Ala Ala Val Pro Gln Pro Ile Pro 100 105 110

Asp Thr Leu Pro Pro Pro Pro Pro Pro Pro Leu Pro Leu Gln Arg
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Asp Asp Asp Asp Asp Asp Asp Asp Ser Glu Met Glu Asn Arg Asp 165 170 175

Arg Leu Ile Arg Lys Ser Arg Ser Arg Gly Gly Ser Thr Arg Gly Asn 180 185 190

Arg Thr Thr Ile Glu Asp His His Leu Gln Glu Glu Lys Ala Pro Pro 195 200 205

Pro Pro Pro Leu Ala Asn Ser Arg Pro Ile Pro Pro Pro Arg Gln His 210 215 220

Gln His Gln His Gln Gln Gln Gln Gln Pro Phe Tyr Asp Tyr Phe 225 230 Phe Pro Asn Val Glu Asn Met Pro Gly Thr Thr Leu Glu Asp Thr Pro 250 Pro Gln Pro Gln Pro Thr Arg Pro Val Pro Pro Gln Pro His Ser Pro Val Val Thr Glu Asp Asp Glu Asp Glu Thr Val Ile Glu Arg Lys Pro Leu Val Glu Glu Arg Pro Lys Arg Val Glu Glu Val Thr Ile Glu Leu Glu Lys Val Thr Asn Leu Arg Gly Met Lys Lys Ser Lys Gly Ile Gly Ile Pro Gly Glu Arg Arg Gly Met Arg Met Pro Val Thr Ala Thr His Leu Ala Asn Val Phe Ile Glu Leu Asp Asp Asn Phe Leu Lys Ala Ser Glu Ser 360 Ala His Asp Val Ser Lys Met Leu Glu Ala Thr Arg Leu His Tyr His 375 380 Ser Asn Phe Ala Asp Asn Arg Gly His Ile Asp His Ser Ala Arg Val 390 395 Met Arg Val Ile Thr Trp Asn Arg Ser Phe Arg Gly Ile Pro Asn Ala 405 Asp Asp Gly Lys Asp Asp Val Asp Leu Glu Glu Asn Glu Thr His Ala 425 Thr Val Leu Asp Lys Leu Leu Ala Trp Glu Lys Lys Leu Tyr Asp Glu Val Lys Ala Gly Glu Leu Met Lys Ile Glu Tyr Gln Lys Lys Val Ala 455 His Leu Asn Arg Val Lys Lys Arg Gly Gly His Ser Asp Ser Leu Glu Arg Ala Lys Ala Ala Val Ser His Leu His Thr Arg Tyr Ile Val Asp Met Gln Ser Met Asp Ser Thr Val Ser Glu Ile Asn Arg Leu Arg Asp 505 Glu Gln Leu Tyr Leu Lys Leu Val His Leu Val Glu Ala Met Gly Lys 520 525

Met Trp Glu Met Met Gln Ile His His Gln Arg Gln Ala Glu Ile Ser 530 540

Lys Val Leu Arg Ser Leu Asp Val Ser Gln Ala Val Lys Glu Thr Asn 545 550 555 560

Asp His His Glu Arg Thr Ile Gln Leu Leu Ala Val Val Gln Glu
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Trp His Thr Gln Phe Cys Arg Met Ile Asp His Gln Lys Glu Tyr Ile 580 585 590

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Thr Leu Lys Glu Lys Val Ser Ser Pro Pro Arg Val Pro Asn Pro Ala 610 615 620

Ile Gln Lys Leu Leu His Ala Trp Tyr Asp Arg Leu Asp Lys Ile Pro 625 630 635 640

Asp Glu Met Ala Lys Ser Ala Ile Ile Asn Phe Ala Ala Val Val Ser 645 650 655

Thr Ile Met Gln Gln Glu Asp Glu Ile Ser Leu Arg Asn Lys Cys 660 665 670

Glu Glu Thr Arg Lys Glu Leu Gly Arg Lys Ile Arg Gln Phe Glu Asp 675 680 685

Trp Tyr His Lys Tyr Ile Gln Lys Arg Gly Pro Glu Gly Met Asn Pro 690 695 700

Asp Glu Ala Asp Asn Asp His Asn Asp Glu Val Ala Val Arg Gln Phe 705 710 715 720

Asn Val Glu Gln Ile Lys Lys Arg Leu Glu Glu Glu Glu Glu Ala Tyr 725 730 735

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Thr Arg Leu Pro Glu Leu Phe Gln Ala Met Ser Glu Val Ala Tyr Ser 755 760 765

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Asn Gln Ser Ser Ser Thr Thr Leu Glu Val Asp Ala Arg Pro Glu Ala 50 55 60

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Leu Lys Leu Ser Gln Leu Glu Gln Glu Leu Val Arg Ala Arg Gln Gln 130 135 140

Gly Leu Cys Val Arg Asn Ser Ser Asp Thr Ser Tyr Leu Gly Pro Ala 145 150 155 160

Gly Asn Met Asn Ser Gly Ile Ala Ala Phe Glu Met Glu Tyr Thr His 165 170 175

Trp Leu Glu Glu Gln Asn Arg Arg Val Ser Glu Ile Arg Thr Ala Leu 180 185 190

Gln Ala His Ile Gly Asp Ile Glu Leu Lys Met Leu Val Asp Ser Cys 195 200 205

Leu Asn His Tyr Ala Asn Leu Phe Arg Met Lys Ala Asp Ala Ala Lys 210 225 220

Ala Asp Val Phe Phe Leu Met Ser Gly Met Trp Arg Thr Ser Thr Glu 225 230 235 240

Arg Phe Phe Gln Trp Ile Gly Gly Phe Arg Pro Ser Glu Leu Leu Asn 245 250 255

Val Val Met Pro Tyr Val Glu Pro Leu Thr Asp Gln Gln Leu Glu 260 265 270

Val Arg Asn Leu Gln Gln Ser Ser Gln Gln Ala Glu Glu Ala Leu Ser 275 280 285

Gln Gly Leu Asp Lys Leu Gln Gln Gly Leu Val Glu Ser Ile Ala Ile 290 295 300

Gln Ile Lys Val Val Glu Ser Val Asn His Gly Ala Pro Met Ala Ser 305 310 315 320

Ala Met Glu Asn Leu Gln Ala Leu Glu Ser Phe Val Asn Gln Ala Asp 325 330 335

His Leu Arg Gln Gln Thr Leu Gln Gln Met Ser Lys Ile Leu Thr Thr 340 345 350

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Ala Val Leu Ser Trp Gly Ile Met Trp Pro Leu Ile Lys Gly Leu Lys

280

275

290

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Asn Met Pro Leu Asn Gln Pro Pro Pro Pro Pro Pro Pro Pro Ser Ser 85 90 95

Ser Thr Ile Val Thr Ala Leu Tyr Gly Ser Leu Pro Leu Pro Pro Pro 100 105 110

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Thr Thr Glu Asn Leu Leu Ala Ser Asn Pro Arg Ser Phe Glu Glu Ser 130 135 140

Ala Lys Phe Gly Cys Leu Gly Lys Lys Arg Gly Gln Asp Ser Asp Asp 145 150 155 160

Thr Arg Gly Asp Arg Arg Tyr Lys Arg Met Ile Lys Asn Arg Glu Ser 165 170 175

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Gly Val Phe Glu Asp Pro Tyr Leu Asp Lys Glu Val Thr Gln Val Ala 65 70 75 80

Lys Gln Glu Arg Lys Lys Asn Arg Arg Gly Gly Ala Lys Arg Leu Asp 85 90 95

Glu Ser Glu Ile Glu Pro Glu Asn Leu Val Pro Glu Glu Trp Arg Asp 100 105 110

Ile Gln Ala Glu Val Asn Leu Thr Lys Lys Asp Lys Arg Lys Ile Ala 115 120 125

Gln Glu Met Glu Phe Gly Val Arg Val Glu Lys Lys Arg Gln Gly Leu 130 135 140

Ile Pro Leu Arg Lys Val Asp Leu Asn Asp Phe Leu Thr Tyr Lys Glu 150 Ala Lys Leu Ala Gln Leu Arg Pro Val Ile Leu Asp Lys Pro Gly Asn 165 170 Phe Ser Asp Asp Ser Gly Ala Ser Ser Asp Gly Glu Thr Ala Val Ser Ser Pro Ser Glu Arg Val Ala Pro Lys Asn Pro Arg Trp Ala Val Tyr Gly Lys Gly Phe Asp His Val Ala Lys Phe Phe Asn Ser Asp Lys Tyr Asp Pro Ser Asp Lys Lys Ser Asp Gly Pro Arg Lys Leu Leu Ser Lys 235 Glu Glu Lys Phe Met Leu Asn Ser Arg Asn Pro Asp Leu Ala Val Ala Thr Ser Lys Lys Trp Leu Pro Leu His Thr Leu Ala Ala Cys Gly Glu 265 Phe Tyr Leu Val Asp Ser Leu Leu Lys His Asn Leu Asp Ile Asn Ala Thr Asp Val Gly Gly Leu Thr Val Leu His Arg Ala Ile Ile Gly Lys 295 300 Lys Gln Ala Ile Thr Asn Tyr Leu Leu Arg Glu Ser Ala Asn Pro Phe 305 310 315 Val Leu Asp Asp Glu Gly Ala Thr Leu Met His Tyr Ala Val Gln Thr 330 Ala Ser Ala Pro Thr Ile Lys Leu Leu Leu Tyr Asn Ala Asp Ile Asn Ala Gln Asp Arg Asp Gly Trp Thr Pro Leu His Val Ala Val Gln 360 Ala Arg Arg Ser Asp Ile Val Lys Leu Leu Ile Lys Gly Ala Asp Ile Glu Val Lys Asn Lys Asp Gly Leu Thr Pro Leu Gly Leu Cys Leu 390 395 Tyr Leu Gly Arg Glu Ile Arg Thr Tyr Glu Val Met Lys Leu Leu Lys 405 Glu Phe Pro Leu Ser Arg His Lys Lys Arg Leu Val Thr Thr Asp Glu 425 430

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Cys Gly Lys Ser Cys Arg Leu Arg Trp Ala Asn Tyr Leu Lys Pro Asp
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Ile Lys Arg Gly Glu Phe Ser Tyr Glu Glu Glu Gln Ile Ile Met

Leu His Ala Ser Arg Gly Asn Lys Trp Ser Val Ile Ala Arg His Leu 85 90 95

Pro Lys Arg Thr Asp Asn Glu Ile Lys Asn Tyr Trp Asn Thr His Leu 100 105 110

Lys Lys Leu Leu Ile Asp Lys Gly Ile Asp Pro Val Thr His Lys Pro 115 120 125

Leu Ala Tyr Asp Ser Asn Pro Asp Glu Gln Ser Gln Ser Gly Ser Ile 130 135 140

Ser Pro Lys Ser Leu Pro Pro Ser Ser Ser Lys Asn Val Pro Glu Ile 145 150 155 160

Thr Ser Ser Asp Glu Thr Pro Lys Tyr Asp Ala Ser Leu Ser Ser Lys
165 170 175

Lys Arg Cys Phe Lys Arg Ser Ser Ser Thr Ser Lys Leu Leu Asn Lys 180 185 190

Val Ala Arg Ala Ser Ser Met Gly Thr Ile Leu Gly Ala Ser Ile 195 200 205

Glu Gly Thr Leu Ile Ser Ser Thr Pro Leu Ser Ser Cys Leu Asn Asp 210 215 220

Asp Phe Ser Glu Thr Ser Gln Phe Gln Met Glu Glu Phe Asp Pro Phe 225 230 235 240

Tyr Gln Ser Ser Glu His Ile Ile Asp His Met Lys Glu Asp Ile Ser 245 250 255

Ile Asn Asn Ser Glu Tyr Asn Phe Ser Gln Phe Leu Glu Gln Phe Ser 260 265 270

Asn Asn Glu Gly Glu Glu Ala Asp Asn Thr Gly Gly Gly Tyr Asn Gln 275 280 285

Asp Leu Leu Met Ser Asp Val Ser Ser Thr Ser Val Asp Glu Asp Glu 290 295 300

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Gly Glu Phe Leu His Gly Asp Ser Asp Ser Lys Asp His Gln Pro Asn

Glu Ser Pro Val Glu Arg His His Glu Ser Ser Ile Lys Glu Val Asp

Phe Phe Ala Ala Lys Ser Gln Pro Phe Asp Leu Gly His Val Arg Thr 50 55 60

Thr Thr Ile Val Gly Ser Ser Gly Phe Asn Asp Gly Leu Gly Leu Val 65 70 75 80

Asn Ser Cys His Gly Thr Ser Ser Asn Asp Gly Asp Asp Lys Thr Lys 85 90 95

385

Thr Gln Ile Ser Arg Leu Lys Leu Glu Leu Glu Arg Leu His Glu Glu Asn His Lys Leu Lys His Leu Leu Asp Glu Val Ser Glu Ser Tyr Asn Asp Leu Gln Arg Arg Val Leu Leu Ala Arg Gln Thr Gln Val Glu Gly Leu His His Lys Gln His Glu Asp Val Pro Gln Ala Gly Ser Ser Gln Ala Leu Glu Asn Arg Arg Pro Lys Asp Met Asn His Glu Thr Pro Ala 170 Thr Thr Leu Lys Arg Arg Ser Pro Asp Asp Val Asp Gly Arg Asp Met His Arg Gly Ser Pro Lys Thr Pro Arg Ile Asp Gln Asn Lys Ser Thr Asn His Glu Glu Gln Asn Pro His Asp Gln Leu Pro Tyr Arg Lys Ala Arg Val Ser Val Arg Ala Arg Ser Asp Ala Thr Thr Val Asn Asp 235 Gly Cys Gln Trp Arg Lys Tyr Gly Gln Lys Met Ala Lys Gly Asn Pro 245 250 Cys Pro Arg Ala Tyr Tyr Arg Cys Thr Met Ala Val Gly Cys Pro Val 265 Arg Lys Gln Val Gln Arg Cys Ala Glu Asp Thr Thr Ile Leu Thr Thr Thr Tyr Glu Gly Asn His Asn His Pro Leu Pro Pro Ser Ala Thr Ala 295 300 Met Ala Ala Thr Thr Ser Ala Ala Ala Ala Met Leu Leu Ser Gly Ser 305 315 Ser Ser Ser Asn Leu His Gln Thr Leu Ser Ser Pro Ser Ala Thr Ser 325 330 Ser Ser Ser Phe Tyr His Asn Phe Pro Tyr Thr Ser Thr Ile Ala Thr Leu Ser Ala Ser Ala Pro Phe Pro Thr Ile Thr Leu Asp Leu Thr Asn Pro Pro Arg Pro Leu Gln Pro Pro Pro Gln Phe Leu Ser Gln Tyr Gly 370 375 380 Pro Ala Ala Phe Leu Pro Asn Ala Asn Gln Ile Arg Ser Met Asn Asn

395

400

390

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Pro Arg Glu Met Val Asp Ser Val Arg Ala Ala Ile Ala Met Asp Pro 420 425 430

Asn Phe Thr Ala Ala Leu Ala Ala Ile Ser Asn Ile Ile Gly Gly
435 440 445

Gly Asn Asn Asn Asn Asn Asn Thr Asp Ile Asn Asp Asn Lys Val 450 460

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Cys Gly Lys Ser Cys Arg Leu Arg Trp Met Asn Tyr Leu Lys Pro Asp 50 55 60

Ile Lys Arg Gly Asn Phe Thr Lys Glu Glu Glu Asp Ala Ile Ile Ser 65 70 75 80

Leu His Gln Ile Leu Gly Asn Arg Trp Ser Ala Ile Ala Ala Lys Leu 85 90 95

Pro Gly Arg Thr Asp Asn Glu Ile Lys Asn Val Trp His Thr His Leu 100 105 110

Lys Lys Arg Leu Glu Asp Tyr Gln Pro Ala Lys Pro Lys Thr Ser Asn 115 120 125

Lys Lys Gly Thr Lys Pro Lys Ser Glu Ser Val Ile Thr Ser Ser 130 135 140

Asn Ser Thr Arg Ser Glu Ser Glu Leu Ala Asp Ser Ser Asn Pro Ser 145 150 155 160

Gly Glu Ser Leu Phe Ser Thr Ser Pro Ser Thr Ser Glu Val Ser Ser 165 170 175

Met Thr Leu Ile Ser His Asp Gly Tyr Ser Asn Glu Ile Asn Met Asp 180 185 190

Asn Lys Pro Gly Asp Ile Ser Thr Ile Asp Gln Glu Cys Val Ser Phe 195 200 205

Glu Thr Phe Gly Ala Asp Ile Asp Glu Ser Phe Trp Lys Glu Thr Leu 210 215 220

Tyr Ser Gln Asp Glu His Asn Tyr Val Ser Asn Asp Leu Glu Val Ala 225 230 235 240

Gly Leu Val Glu Ile Gln Glu Phe Gln Asn Leu Gly Ser Ala Asn
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                             40
Val Ser Gly Ser Gly Ser Val Ser Gly Gly Pro Asp Pro Val Asp Glu
Leu Met Ser Lys Ile Leu Gly Ser Phe His Lys Thr Ile Ser Val Leu
Asp Ser Phe Asp Pro Val Ala Val Ser Val Pro Ile Ala Val Glu Gly
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Gly Phe Ile Asp Asn Asp Gln Phe Ser Ser Phe Phe Asp Ser Tyr

330

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Leu Tyr Arg Met Gly Ser Gly Ser Ser Val Val Leu Asp Ser Glu Asn 35 40 45

Gly Val Glu Ala Glu Ser Arg Lys Leu Pro Ser Ser Lys Tyr Lys Gly
50 60

Val Val Pro Gln Pro Asn Gly Arg Trp Gly Ala Gln Ile Tyr Glu Lys 65 70 75 80

His Gln Arg Val Trp Leu Gly Thr Phe Asn Glu Glu Asp Glu Ala Ala 85 90 95

Arg Ala Tyr Asp Val Ala Val His Arg Phe Arg Arg Arg Asp Ala Val

Thr Asn Phe Lys Asp Val Lys Met Asp Glu Asp Glu Val Asp Phe Leu 115 120 125

Asn Ser His Ser Lys Ser Glu Ile Val Asp Met Leu Arg Lys His Thr 130 135 Tyr Asn Glu Glu Leu Glu Gln Ser Lys Arg Arg Arg Asn Gly Asn Gly Asn Met Thr Arg Thr Leu Leu Thr Ser Gly Leu Ser Asn Asp Gly Val 170 Ser Thr Thr Gly Phe Arg Ser Ala Glu Ala Leu Phe Glu Lys Ala Val Thr Pro Ser Asp Val Gly Lys Leu Asn Arg Leu Val Ile Pro Lys His 200 His Ala Glu Lys His Phe Pro Leu Pro Ser Ser Asn Val Ser Val Lys Gly Val Leu Leu Asn Phe Glu Asp Val Asn Gly Lys Val Trp Arg Phe 235 Arg Tyr Ser Tyr Trp Asn Ser Ser Gln Ser Tyr Val Leu Thr Lys Gly 245 250 Trp Ser Arg Phe Val Lys Glu Lys Asn Leu Arg Ala Gly Asp Val Val 265 Ser Phe Ser Arg Ser Asn Gly Gln Asp Gln Gln Leu Tyr Ile Gly Trp 275 280 Lys Ser Arg Ser Gly Ser Asp Leu Asp Ala Gly Arg Val Leu Arg Leu Phe Gly Val Asn Ile Ser Pro Glu Ser Ser Arg Asn Asp Val Val Gly Asn Lys Arg Val Asn Asp Thr Glu Met Leu Ser Leu Val Cys Ser Lys 325 330 Lys Gln Arg Ile Phe His Ala Ser 340 <210> 67 <211> 984

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Ser Leu Leu Ser Ser Gln Ser Lys Gln Lys Pro Leu Gln Leu Phe 50 55 60

Phe Leu Phe Phe Met Ile Leu Asn Val Tyr Ile Cys Lys Asn Glu Gly 65 70 75 80

Leu Leu Arg Cys Gly Lys Ser Cys Arg Leu Arg Trp Ile Asn Tyr Leu 85 90 95

Arg Pro Asp Leu Lys Arg Gly Asn Phe Thr Ser Glu Glu Glu Glu Thr 100 105 110

Ile Ile Lys Leu His His Asn Tyr Gly Asn Lys Trp Ser Lys Ile Ala 115 120 125

Ser Gln Leu Pro Gly Arg Thr Asp Asn Glu Ile Lys Asn Val Trp His 130 135 140

Thr His Leu Lys Lys Arg Leu Ala Gln Ser Ser Gly Thr Ala Asp Glu 145 150 155 160

Pro Ala Ser Pro Cys Ser Ser Asp Ser Val Ser Arg Gly Lys Asp Asp 165 170 175

Lys Ser Ser His Val Glu Asp Ser Leu Asn Arg Glu Thr Asn His Arg 180 185 190

Asn Glu Leu Ser Thr Ser Met Ser Ser Gly Gly Ser Asn Gln Gln Asp 195 200 Asp Pro Lys Ile Asp Glu Leu Arg Phe Glu Tyr Ile Glu Glu Ala Tyr 215 Ser Glu Phe Asn Asp Ile Ile Ile Gln Glu Val Asp Lys Pro Asp Leu 225 230 Leu Glu Ile Pro Phe Asp Ser Asp Pro Asp Ile Trp Ser Phe Leu Asp 250 Thr Ser Asn Ser Phe Gln Gln Ser Thr Ala Asn Glu Asn Ser Ser Gly 260 265 Ser Arg Ala Thr Thr Glu Glu Glu Ser Asp Glu Asp Glu Val Lys Lys 280 Trp Phe Lys His Leu Glu Ser Glu Leu Gly Leu Glu Glu Asp Asp Asn 295 Gln Gln Gln Tyr Lys Glu Glu Glu Ser Ser Ser Ser Leu Leu Lys Asn Tyr Glu Leu Met Ile His <210> 69 <211> 826 <212> DNA <213> Arabidopsis thaliana <220> <223> G620 gaattgaact tggaccagca cagcaacaac ccaaccccaa tgaccagctc agtcatagta 60 gccggcgccg gtgacaagaa caatggtatc gtggtccagc agcaaccacc atgtgtggct 120 cgtgagcaag accaatacat gccaatcgca aacgtcataa gaatcatgcg taaaacctta 180 ccgtctcacg ccaaaatctc tgacgacgcc aaagaaacga ttcaagaatg tgtctccgag 240 tacatcagct tcgtgaccgg tgaagccaac gagcgttgcc aacgtgagca acgtaagacc 300 ataactgctg aagatateet ttgggetatg ageaagettg ggttegataa etaegtggae 360 cccctcaccg tgttcattaa ccggtaccgt gagatagaga ccgatcgtgg ttctgcactt 420 agaggtgagc caccgtcgtt gagacaaacc tatggaggaa atggtattgg gtttcacggc 480 ccatctcatg gcctacctcc tccgggtcct tatggttatg gtatgttgga ccaatccatg 540 gttatgggag gtggtcggta ctaccaaaac gggtcgtcgg gtcaagatga atccagtgtt 600 ggtggtggct cttcgtcttc cattaacgga atgccggctt ttgaccatta tggtcagtat 660 aagtgaagaa ggagttattc ttcattttta tatctattca aaacatgtgt ttcgatagat 720 attttatttt tatgtcttat caataacatt tctatataat gttgcttctt taaggaaaag 780 tgttgtatgt caatacttta tgagaaactg atttatatat gcaaat <210> 70

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Tyr Met Pro Ile Ala Asn Val Ile Arg Ile Met Arg Lys Thr Leu Pro 35 40 45

Ser His Ala Lys Ile Ser Asp Asp Ala Lys Glu Thr Ile Gln Glu Cys
50 55 60

Val Ser Glu Tyr Ile Ser Phe Val Thr Gly Glu Ala Asn Glu Arg Cys
65 70 75 80

Gln Arg Glu Gln Arg Lys Thr Ile Thr Ala Glu Asp Ile Leu Trp Ala 85 90 95

Met Ser Lys Leu Gly Phe Asp Asn Tyr Val Asp Pro Leu Thr Val Phe
100 105 110

Ile Asn Arg Tyr Arg Glu Ile Glu Thr Asp Arg Gly Ser Ala Leu Arg 115 120 125

Gly Glu Pro Pro Ser Leu Arg Gln Thr Tyr Gly Gly Asn Gly Ile Gly 130 135 140

Phe His Gly Pro Ser His Gly Leu Pro Pro Pro Gly Pro Tyr Gly Tyr 145 150 155 160

Gly Met Leu Asp Gln Ser Met Val Met Gly Gly Gly Arg Tyr Tyr Gln
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Ser Ser Ile Asn Gly Met Pro Ala Phe Asp His Tyr Gly Gln Tyr Lys 195 200 205

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Gln Gln Asn His Gly His Asp Ile Asp Gln His Arg Ile Gly Gly Leu 35 40 45

Lys Arg Asp Arg Asp Ala Asp Ile Asp Pro Asn Glu His Ser Ser Ala 50 55 60

Gly Lys Asp Gln Ser Thr Pro Gly Ser Gly Glu Ser Gly Gly Gly 65 70 75 80

Gly Gly Asp Asn His Ile Thr Arg Arg Pro Arg Gly Arg Pro Ala 85 90 95

Gly Ser Lys Asn Lys Pro Lys Pro Pro Ile Ile Ile Thr Arg Asp Ser 100 105 110

Ala Asn Ala Leu Lys Ser His Val Met Glu Val Ala Asn Gly Cys Asp 115 120 125

Val Met Glu Ser Val Thr Val Phe Ala Arg Arg Arg Gln Arg Gly Ile 130 135 140

Cys Val Leu Ser Gly Asn Gly Ala Val Thr Asn Val Thr Ile Arq Gln 145 150 Pro Ala Ser Val Pro Gly Gly Gly Ser Ser Val Val Asn Leu His Gly 170 Arg Phe Glu Ile Leu Ser Leu Ser Gly Ser Phe Leu Pro Pro Pro Ala Pro Pro Ala Ala Ser Gly Leu Thr Ile Tyr Leu Ala Gly Gly Gln Gly Gln Val Val Gly Gly Ser Val Val Gly Pro Leu Met Ala Ser Gly Pro 220 Val Val Ile Met Ala Ala Ser Phe Gly Asn Ala Ala Tyr Glu Arg Leu Pro Leu Glu Glu Asp Asp Gln Glu Glu Gln Thr Ala Gly Ala Val Ala 245 250 Asn Asn Ile Asp Gly Asn Ala Thr Met Gly Gly Gly Thr Gln Thr Gln Thr Gln Thr Gln Gln Gln Gln Gln Gln Leu Met Gln Asp Pro Thr 280 Ser Phe Ile Gln Gly Leu Pro Pro Asn Leu Met Asn Ser Val Gln Leu 295 Pro Ala Glu Ala Tyr Trp Gly Thr Pro Arg Pro Ser Phe 310 315 <210> 73 <211> 913 <212> DNA <213> Arabidopsis thaliana <220> <223> G511 <400> 73 gtttcttgtt gttaaaaata tcgtacaaaa atggccgatg aggtcacaat cgggtttcgc 60 ttctatccca cggaagaaga actggtttcg ttctacctac gaaaccagct cgaaggaagg 120 agtgatgact caatgcatcg tgtcattccc gtacttgacg tctttgaggt cgagcctagt 180 catcttccaa atgttgctgg agtgagatgt cgaggagacg ctgagcaatg gttcttcttc 240 gtgccacgac aagaacgcga agcaagagga ggcagaccga gtagaactac tggttcagga 300 tactggaaag caactggatc acctggtcca gtcttttcca aagacaacaa aatgattgga 360 gcaaagaaaa ctatggtttt ctacactgga aaagcaccca caggaagaaa aactaaatgg 420 aaaatgaatg agtaccacgc cgttgacgaa acagtcaacg cttccacaat ccctaaqctq 480 agacgtgagt tcagtttatg tcgagtctac ataacaacag gaagctccag agcttttgat 540 agacgtcctg agggagtttt gcagacagag agaatgctaa caagtgatgt tgcagtagct 600 gagacatcgt tccgtgtgga aagctcactg gaaacttcga tttcaggagg agaacatatt 660 gatgteteta tgaacacaga gtttgttgat ggactateag aaccgatgtg ggactgggaa 720 cagctgactt ggccttgaag ctatatagat tttataatca agcaaattta aacttgtttc 780 aattgcttat tgttagtttg aattttatga cccgaaagat tctttttctt tctttacctt 840 gtaacgtgag aatttgagaa ataataaatg acctagacag tgacatttga aaaaaaaaa 900 aaaaaaaaa aaa 913

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Pro Ser His Leu Pro Asn Val Ala Gly Val Arg Cys Arg Gly Asp Ala 50 55 60

Glu Gln Trp Phe Phe Phe Val Pro Arg Gln Glu Arg Glu Ala Arg Gly 65 70 75 80

Gly Arg Pro Ser Arg Thr Thr Gly Ser Gly Tyr Trp Lys Ala Thr Gly
85 90 95

Ser Pro Gly Pro Val Phe Ser Lys Asp Asn Lys Met Ile Gly Ala Lys 100 105 110

Lys Thr Met Val Phe Tyr Thr Gly Lys Ala Pro Thr Gly Arg Lys Thr 115 120 125

Lys Trp Lys Met Asn Glu Tyr His Ala Val Asp Glu Thr Val Asn Ala 130 135 140

Ser Thr Ile Pro Lys Leu Arg Arg Glu Phe Ser Leu Cys Arg Val Tyr 145 150 155 160

Ile Thr Thr Gly Ser Ser Arg Ala Phe Asp Arg Arg Pro Glu Gly Val 165 170 175

Leu Gln Thr Glu Arg Met Leu Thr Ser Asp Val Ala Val Ala Glu Thr 180 185 190

Ser Phe Arg Val Glu Ser Ser Leu Glu Thr Ser Ile Ser Gly Glu 195 200 205

His Ile Asp Val Ser Met Asn Thr Glu Phe Val Asp Gly Leu Ser Glu 210 215 220

Pro Met Trp Asp Trp Glu Gln Leu Thr Trp Pro 225 230 235

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Met Ala Ala Ser Asn His Ser Ser Gly Lys Pro Gly Gly Val Leu Ser

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Thr Leu Pro Arg Glu Gly Glu Arg Val Tyr Tyr Phe Pro Glu Gly His
35 40 45

Met Glu Gln Leu Glu Ala Ser Met His Gln Gly Leu Glu Gln Gln Met 50 55 60

Pro Ser Phe Asn Leu Pro Ser Lys Ile Leu Cys Lys Val Ile Asn Ile 65 70 75 80

Gln Arg Arg Ala Glu Pro Glu Thr Asp Glu Val Tyr Ala Gln Ile Thr 85 90 95

Leu Leu Pro Glu Leu Asp Gln Ser Glu Pro Thr Ser Pro Asp Ala Pro
100 105 110

Val Gln Glu Pro Glu Lys Cys Thr Val His Ser Phe Cys Lys Thr Leu 115 120 125

Thr Ala Ser Asp Thr Ser Thr His Gly Gly Phe Ser Val Leu Arg Arg 130 135 140

His Ala Asp Asp Cys Leu Pro Pro Leu Asp Met Ser Gln Gln Pro Pro 145 150 155 160

Trp Gln Glu Leu Val Ala Thr Asp Leu His Asn Ser Glu Trp His Phe
165 170 175

Arg His Ile Phe Arg Gly Gln Pro Arg Arg His Leu Leu Thr Thr Gly 180 185 190

Trp Ser Val Phe Val Ser Ser Lys Leu Val Ala Gly Asp Ala Phe 195 200 205

Ile Phe Leu Arg Gly Glu Asn Glu Glu Leu Arg Val Gly Val Arg Arg 210 215 220

His Met Arg Gln Gln Thr Asn Ile Pro Ser Ser Val Ile Ser Ser His 225 230 235 240

Ser Met His Ile Gly Val Leu Ala Thr Ala Ala His Ala Ile Thr Thr 245 250 255

Gly Thr Ile Phe Ser Val Phe Tyr Lys Pro Arg Thr Ser Arg Ser Glu 260 265 270

Phe Ile Val Ser Val Asn Arg Tyr Leu Glu Ala Lys Thr Gln Lys Leu 275 280 285

Ser Val Gly Met Arg Phe Lys Met Arg Phe Glu Gly Glu Glu Ala Pro 290 295 300

Glu Lys Arg Phe Ser Gly Thr Ile Val Gly Val Gln Glu Asn Lys Ser Ser Val Trp His Asp Ser Glu Trp Arg Ser Leu Lys Val Gln Trp Asp Glu Pro Ser Ser Val Phe Arg Pro Glu Arg Val Ser Pro Trp Glu Leu Glu Pro Leu Val Ala Asn Ser Thr Pro Ser Ser Gln Pro Gln Pro Pro 360 Gln Arg Asn Lys Arg Pro Arg Pro Pro Gly Leu Pro Ser Pro Ala Thr Gly Pro Ser Gly Pro Val Thr Pro Asp Gly Val Trp Lys Ser Pro Ala Asp Thr Pro Ser Ser Val Pro Leu Phe Ser Pro Pro Ala Lys Ala Ala 410 Thr Phe Gly His Gly Gly Asn Lys Ser Phe Gly Val Ser Ile Gly Ser Ala Phe Trp Pro Thr Asn Ala Asp Ser Ala Ala Glu Ser Phe Ala Ser 440 Ala Phe Asn Asn Glu Ser Thr Glu Lys Lys Gln Thr Asn Gly Asn Val 455 460 Cys Arg Leu Phe Gly Phe Glu Leu Val Glu Asn Val Asn Val Asp Glu 470 475 Cys Phe Ser Ala Ala Ser Val Ser Gly Ala Val Ala Val Asp Gln Pro 485 490 Val Pro Ser Asn Glu Phe Asp Ser Gly Gln Gln Ser Glu Pro Leu Asn Ile Asn Gln Ser Asp Ile Pro Ser Gly Ser Gly Asp Pro Glu Lys Ser 515 Ser Leu Arg Ser Pro Gln Glu Ser Gln Ser Arg Gln Ile Arg Ser Cys 535 Thr Lys Val His Met Gln Gly Ser Ala Val Gly Arg Ala Ile Asp Leu 550 Thr Arg Ser Glu Cys Tyr Glu Asp Leu Phe Lys Lys Leu Glu Glu Met Phe Asp Ile Lys Gly Glu Leu Leu Glu Ser Thr Lys Lys Trp Gln Val 585 590 Val Tyr Thr Asp Asp Glu Asp Asp Met Met Val Gly Asp Asp Pro 595 600 605

Trp Asn Glu Phe Cys Gly Met Val Arg Lys Ile Phe Ile Tyr Thr Pro 610 615 Glu Glu Val Lys Lys Leu Ser Pro Lys Asn Lys Leu Ala Val Asn Ala 625 630 635 Arg Met Gln Leu Lys Ala Asp Ala Glu Glu Asn Gly Asn Thr Glu Gly 650 Arg Ser Ser Ser Met Ala Gly Ser Arg <210> 77 <211> 2217 <212> DNA <213> Arabidopsis thaliana <220> <223> G385 <400> 77 tagggtttgc tttcagtttc cggagtataa gaaaagatgt tcgagccaaa tatgctqctt 60 gcggctatga acaacgcaga cagcaataac cacaactaca accacqaaqa caacaataat 120 gaaggatttc ttcgggacga tgaattcgac agtccgaata ctaaatcggg aagtgagaat 180 caagaaggag gatcaggaaa cgaccaagat cctcttcatc ctaacaagaa gaaacgatat 240 categacaca eccaacttea gatecaggag atggaagegt tetteaaaga gtgteeteae 300 ccagatgaca agcaaaggaa acagctaagc cgtgaattga atttggaacc tcttcaggtc 360 aaattctggt tccaaaacaa acgtacccaa atgaagaatc atcacgagcg gcatgagaac 420 tcacatcttc gggcggagaa cgaaaagctt cgaaacgaca acctaagata tcgagaggct 480 cttgcaaatg cttcgtgtcc taattgtggt ggtccaacag ctatcggaga aatgtcattc 540 gacgaacacc aactccgtct cgaaaatgct cgattaaggg aagagatcga ccqtatatcc 600 gcaatcgcag ctaaatacgt aggcaagcca gtctcaaact atccacttat gtctcctcct 660 cctcttcctc cacgtccact agaactcgcc atgggaaata ttggaggaga agcttatgga 720 aacaatccaa acgatctcct taagtccatc actgcaccaa cagaatctga caaacctgtc 780 atcategact tateegtgge tgeaatggaa gageteatga ggatggttea agtagacgag 840 cctctgtgga agagtttggc tttagacgaa gaagaatatg caaggacctt tcctagaggg 900 atoggaccta gaccggctgg atatagatca gaagcttcgc gagaaagcgc ggttgtgatc 960 atgaatcatg ttaacatcgt tgagattctc atggatgtga atcaatggtc gacgattttc 1020 gcggggatgg tttctagagc aatgacatta gcggttttat cgacaggagt tgcaggaaac 1080 tataatggag ctcttcaagt gatgagcgca gagtttcaag ttccatctcc attagtccca 1140 acacgtgaaa cctatttege acgttactgt aaacaacaag gagatggttc gtgggeggtt 1200 gtegatattt cgttggatag tctccaacca aatcccccgg ctagatgcag gcggcgagct 1260 tcaggatgtt tgattcaaga attgccaaat ggatattcta aggtgacttg ggtggagcat 1320 gtggaagttg atgacagagg agttcataac ttatacaaac acatggttag tactggtcat 1380 gccttcggtg ctaaacgctg ggtagccatt cttgaccgcc aatgcgagcg gttagctagt 1440 gtcatggcta caaacatttc ctctggagaa gttggcgtga taaccaacca agaagggagg 1500 aggagtatgc tgaaattggc agagcggatg gttataagct tttgtgcagg agtgagtgct 1560 tcaaccgctc acacgtggac tacattgtcc ggtacaggag ctgaagatgt tagagtgatg 1620 actaggaaga gtgtggatga tccaggaagg tctcctggta ttgttcttag tgcagccact 1680 tetttttgga teeetgttee teeaaagega gtetttgaet teeteagaga egagaattea 1740 agaaatgagt gggatattet gtetaatgga ggagttgtge aagaaatgge acatattget 1800 aacgggaggg ataccggaaa ctgtgtttct cttcttcggg taaatagtgc aaactctagc 1860 cagagcaata tgctgatcct acaagagagc tgcattgatc ctacagcttc ctttgtgatc 1920 tatgctccag tcgatattgt agctatgaac atagtgctta atggaggtga tccagactat 1980 gtggctctgc ttccatcagg ttttgctatt cttcctgatg gtaatgccaa tagtggagcc 2040

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2217

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· ·

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Asn Asn His Asn Tyr Asn His Glu Asp Asn Asn Glu Gly Phe Leu 20 25 30

Arg Asp Asp Glu Phe Asp Ser Pro Asn Thr Lys Ser Gly Ser Glu Asn 35 40 45

Gln Glu Gly Gly Ser Gly Asn Asp Gln Asp Pro Leu His Pro Asn Lys
50 55 60

Lys Lys Arg Tyr His Arg His Thr Gln Leu Gln Ile Gln Glu Met Glu 65 70 75 80

Ala Phe Phe Lys Glu Cys Pro His Pro Asp Asp Lys Gln Arg Lys Gln 85 90 95

Leu Ser Arg Glu Leu Asn Leu Glu Pro Leu Gln Val Lys Phe Trp Phe
100 105 110

Gln Asn Lys Arg Thr Gln Met Lys Asn His His Glu Arg His Glu Asn 115 120 125

Ser His Leu Arg Ala Glu Asn Glu Lys Leu Arg Asn Asp Asn Leu Arg 130 135 140

Tyr Arg Glu Ala Leu Ala Asn Ala Ser Cys Pro Asn Cys Gly Gly Pro 145 150 155 160

Thr Ala Ile Gly Glu Met Ser Phe Asp Glu His Gln Leu Arg Leu Glu 165 170 175

Asn Ala Arg Leu Arg Glu Glu Ile Asp Arg Ile Ser Ala Ile Ala Ala 180 185 190

Lys Tyr Val Gly Lys Pro Val Ser Asn Tyr Pro Leu Met Ser Pro Pro 195 200 205

Pro Leu Pro Pro Arg Pro Leu Glu Leu Ala Met Gly Asn Ile Gly Gly 210 215 220

Glu Ala Tyr Gly Asn Asn Pro Asn Asp Leu Leu Lys Ser Ile Thr Ala 225 230 235 240

530

Pro Thr Glu Ser Asp Lys Pro Val Ile Ile Asp Leu Ser Val Ala Ala 245 250 Met Glu Glu Leu Met Arg Met Val Gln Val Asp Glu Pro Leu Trp Lys 265 Ser Leu Ala Leu Asp Glu Glu Glu Tyr Ala Arg Thr Phe Pro Arg Gly 275 280 Ile Gly Pro Arg Pro Ala Gly Tyr Arg Ser Glu Ala Ser Arg Glu Ser Ala Val Val Ile Met Asn His Val Asn Ile Val Glu Ile Leu Met Asp Val Asn Gln Trp Ser Thr Ile Phe Ala Gly Met Val Ser Arg Ala Met 330 Thr Leu Ala Val Leu Ser Thr Gly Val Ala Gly Asn Tyr Asn Gly Ala Leu Gln Val Met Ser Ala Glu Phe Gln Val Pro Ser Pro Leu Val Pro Thr Arg Glu Thr Tyr Phe Ala Arg Tyr Cys Lys Gln Gln Gly Asp Gly Ser Trp Ala Val Val Asp Ile Ser Leu Asp Ser Leu Gln Pro Asn Pro Pro Ala Arg Cys Arg Arg Ala Ser Gly Cys Leu Ile Gln Glu Leu 410 Pro Asn Gly Tyr Ser Lys Val Thr Trp Val Glu His Val Glu Val Asp 425 Asp Arg Gly Val His Asn Leu Tyr Lys His Met Val Ser Thr Gly His 440 Ala Phe Gly Ala Lys Arg Trp Val Ala Ile Leu Asp Arg Gln Cys Glu Arg Leu Ala Ser Val Met Ala Thr Asn Ile Ser Ser Gly Glu Val Gly 470 475 Val Ile Thr Asn Gln Glu Gly Arg Arg Ser Met Leu Lys Leu Ala Glu Arg Met Val Ile Ser Phe Cys Ala Gly Val Ser Ala Ser Thr Ala His Thr Trp Thr Thr Leu Ser Gly Thr Gly Ala Glu Asp Val Arg Val Met 515 Thr Arg Lys Ser Val Asp Asp Pro Gly Arg Ser Pro Gly Ile Val Leu

535

Ser Ala Ala Thr Ser Phe Trp Ile Pro Val Pro Pro Lys Arg Val Phe 545 550 555 Asp Phe Leu Arg Asp Glu Asn Ser Arg Asn Glu Trp Asp Ile Leu Ser 565 570 Asn Gly Gly Val Val Gln Glu Met Ala His Ile Ala Asn Gly Arg Asp 580 585 Thr Gly Asn Cys Val Ser Leu Leu Arg Val Asn Ser Ala Asn Ser Ser Gln Ser Asn Met Leu Ile Leu Gln Glu Ser Cys Ile Asp Pro Thr Ala 615 Ser Phe Val Ile Tyr Ala Pro Val Asp Ile Val Ala Met Asn Ile Val Leu Asn Gly Gly Asp Pro Asp Tyr Val Ala Leu Leu Pro Ser Gly Phe 650 Ala Ile Leu Pro Asp Gly Asn Ala Asn Ser Gly Ala Pro Gly Gly Asp 665 Gly Gly Ser Leu Leu Thr Val Ala Phe Gln Ile Leu Val Asp Ser Val Pro Thr Ala Lys Leu Ser Leu Gly Ser Val Ala Thr Val Asn Asn Leu 695 Ile Ala Cys Thr Val Glu Arg Ile Lys Ala Ser Met Ser Cys Glu Thr 710 715 Ala <210> 79 <211> 1857 <212> DNA <213> Arabidopsis thaliana <220> <223> G261 <400> 79 gtttaggttc gagaagcaga gagggttcga gaagctaata agggtttctt ctttttgatt 60 ttaatgctaa aagggttcta gattcgttga attttacaag ggttttaggg gttcttagaa 120 gcttttgctt gattgtcttt tatttagaaa cagtggtgag tttttagtct ttcactttgt 180 tcaagttcga agcttttttt ggagggaatt ttgggcttct gattttgatc gaaacttact 240

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<223> G261

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Val Ser Trp Ser Gln Ser Asn Lys Ser Phe Ile Val Trp Asn Pro Pro 35 40 45

Glu Phe Ser Arg Asp Leu Leu Pro Arg Phe Phe Lys His Asn Asn Phe 50 55 60

Ser Ser Phe Ile Arg Gln Leu Asn Thr Tyr Gly Phe Arg Lys Ala Asp 65 70 75 80

Pro Glu Gln Trp Glu Phe Ala Asn Asp Asp Phe Val Arg Gly Gln Pro 85 90 95

His Leu Met Lys Asn Ile His Arg Arg Lys Pro Val His Ser His Ser 100 105 110

Leu Pro Asn Leu Gln Ala Gln Leu Asn Pro Leu Thr Asp Ser Glu Arg

Val Arg Met Asn Asn Gln Ile Glu Arg Leu Thr Lys Glu Lys Glu Gly 130 135 140 Leu Leu Glu Glu Leu His Lys Gln Asp Glu Glu Arg Glu Val Phe Glu 145 150 155 160

Met Gln Val Lys Glu Leu Lys Glu Arg Leu Gln His Met Glu Lys Arg 165 170 175

Gln Lys Thr Met Val Ser Phe Val Ser Gln Val Leu Glu Lys Pro Gly
180 185 190

Leu Ala Leu Asn Leu Ser Pro Cys Val Pro Glu Thr Asn Glu Arg Lys
195 200 205

Arg Arg Phe Pro Arg Ile Glu Phe Phe Pro Asp Glu Pro Met Leu Glu 210 215 220

Glu Asn Lys Thr Cys Val Val Val Arg Glu Glu Gly Ser Thr Ser Pro 225 230 235 240

Ser Ser His Thr Arg Glu His Gln Val Glu Gln Leu Glu Ser Ser Ile
245 250 255

Ala Ile Trp Glu Asn Leu Val Ser Asp Ser Cys Glu Ser Met Leu Gln 260 265 270

Ser Arg Ser Met Met Thr Leu Asp Val Asp Glu Ser Ser Thr Phe Pro 275 280 285

Glu Ser Pro Pro Leu Ser Cys Ile Gln Leu Ser Val Asp Ser Arg Leu 290 295. 300

Lys Ser Pro Pro Ser Pro Arg Ile Ile Asp Met Asn Cys Glu Pro Asp 305 310 315 320

Gly Ser Lys Glu Gln Asn Thr Val Ala Ala Pro Pro Pro Pro Pro Val
325 330 335

Ala Gly Ala Asn Asp Gly Phe Trp Gln Gln Phe Phe Ser Glu Asn Pro 340 345 350

Gly Ser Thr Glu Gln Arg Glu Val Gln Leu Glu Arg Lys Asp Asp Lys 355 360 365

Asp Lys Ala Gly Val Arg Thr Glu Lys Cys Trp Trp Asn Ser Arg Asn 370 375 380

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Asn Gln Val Glu Ser Leu Ser Glu Asp Leu Met Ala Leu Glu Asp Tyr

Met Arg Phe Tyr Gln Ile Pro Val Ala Asp Asp Gln Ser Ala Thr Asp

155

160

150

Ile Gly Asn Leu Trp Ser Tyr Gln Asp Ser Asn 165 170

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Gly Lys Arg Ser Asp Asp Glu Ser Glu Ile Cys Ala Ile Asp Leu Leu 35 40 45

Ala Ser Leu Ala Gly Lys Leu Leu Glu Glu Ser Glu Ser Ser Thr
50 55 60

Ser Thr Tyr Ala Ser Glu Ala Asp Asn Leu Asp His Leu Gly Gly Leu 65 70 75 80

Ile Lys Gln Glu Leu Glu Asp Gly Tyr Thr Thr Lys Pro Cys Lys Ser 85 90 95

Glu Phe Phe Asp Pro Gly Asn Pro Ala Ser Lys Ser Thr Ser Glu Asn 100 105 110

Thr Ser Val Thr Cys Leu Pro Phe Ser Ser Phe Glu Asn Asp Cys Ile 115 120 125

Leu Glu Gln Thr Pro Val Ser Asp Cys Lys Arg Ala Ser Gly Leu Lys 130 135 140

Ser Leu Val Gly Ser Ile Thr Glu Glu Thr Cys Val Val Asn Glu Asp 145 150 155 160

Ala Gly Ser Glu Gln Gly Ala Asn Thr Phe Ser Leu Lys Asp Pro Ser 165 170 175

Gln Leu His Ser Gln Ser Pro Glu Ser Val Leu Leu Asp Gly Asp Val 180 185 190

Lys Leu Ala Pro Cys Thr Asp Gln Val Pro Asn Asp Ser Phe Lys Gly
195 200 205

Tyr Arg Asn His Ser Lys Leu Val Cys Arg Asp Asp Glu Asn Tyr 210 215 220

Cys Lys Tyr Tyr Lys Phe Ser Asp Lys Cys Lys Ser Tyr Arg Pro Leu 225 230 235 240

Ser Arg Val Gly Asn Arg Arg Ile Met Gln Ser Val Arg Ala Ile Ser 245 250 255

Lys Leu Lys Cys Phe Glu Asp Thr Arg Thr Asp Gly Arg Leu Lys Ala 260 265 270

Leu Tyr Arg Lys Arg Lys Leu Cys Tyr Gly Tyr Asn Pro Trp Lys Arg 275 280 285

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Gln Gln Arg Arg Gly Glu Pro Val Pro Gln Glu Leu Leu Asp Arg Val 595 600 Leu Gly Ala His Arg Tyr Trp Thr Gln His Gln Met Lys Gln Asn Gly 615 Lys His Gln Val Ala Thr Thr Met Val Val Glu Ala Gly Ser Ser Met 625 630 <210> 85 <211> 1209 <212> DNA <213> Arabidopsis thaliana <220> <223> G229 <400> 85 ttgtggtcag tggaataaac acatataacc gccggagaaa atgggaagag cgccatgttg 60 cgagaaggtc ggtatcaaga gagggcggtg gacggcggag gaggaccaga ttctctccaa 120 ctacattcaa tccaatggtg aaggttcttg gagatctctc cccaaaaatg ccgqattaaa 180 aaggtgtgga aagagctgta gattgagatg gataaactat ctaagatcag acctcaagcg 240 tggaaacata actccagaag aagaagaact cgttgttaaa ttgcattcca ctttgggaaa 300 caggtggtca ctaatcgcgg gtcatctacc agggagaaca gacaacgaaa taaaaaatta 360 ttggaactct catctcagcc gtaaactcca caacttcatt aggaagccat ccatctctca 420 agacgtetee geegtaatea tggegaaege ttetteageg ceacegeege egeaggeaaa 480 acgcagactt gggagaacga gtaggtccgc tatgaaacca aaaatccgca gaacaaaaac 540 tegtaaaacg aagaaaacgt etgeaceace ggageetaac geegatgtag etggggetga 600 taaagaagca ttaatggtgg agtcaagtgg agccgaggct gagctaggac gaccatgtga 660 ctactatgga gatgattgta acaaaaatct catgagcatt aatggcgata atggagtttt 720 aacgtttgat gatgatatca tcgatctttt gttggacgag tcagatcctg gccacttgta 780 cacaaacaca acgtgcggtg gtggtgggga gttgcataac ataagagact ctgaaggagc 840 cagagggttc tcggatactt ggaaccaagg gaatctcgac tgtcttcttc agtcttgtcc 900 atctgtggag tegtttetea actaegacea ceaagttaae gaegegtega eggatgagtt 960 tatcgattgg gattgtgttt ggcaagaagg tagtgataat aatctttggc atgagaaaga 1020 gaatcccgac tcaatggtct cgtggctttt agacggtgat gatgaggcca cgatcgggaa 1080 tagtaattgt gagaactttg gagaaccgtt agatcatgac gacgaaagcg ctttggtcgc 1140 ttggcttctg tcatgatgat attgattgat ccgttatgta atcttttttg tgcattcaca 1200 gtttgaatc 1209 <210> 86 <211> 371 <212> PRT <213> Arabidopsis thaliana <220> <223> G229 <400> 86 Met Gly Arg Ala Pro Cys Cys Glu Lys Val Gly Ile Lys Arg Gly Arg

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Gly Ile Arg Asp Arg Glu Asp Glu Asp Phe Ser Ser Gly Val Ala Gly 65 70 75 80

Asp Asn Asp Arg Glu Val Pro Gly Glu Val Asp Phe Phe Ser Asp Lys
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Lys Ser Arg Val Cys Arg Glu Asp Asp Glu Gly Phe Arg Val Lys
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410

405

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Tyr Tyr Asn Ser Ala Met Ala Ala Ser Gly His Pro Pro Pro Pro Tyr
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Ser Val Ser Pro Ser Ser Gly Asp Thr Gly Val Lys Leu Ile Gln Gly 210 215 220

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Pro Asn Lys Arg Ser Arg Leu Trp Leu Gly Ser Tyr Thr Thr Asp Ile
Ala Ala Arg Ala Tyr Asp Val Ala Val Phe Tyr Leu Arg Gly Pro
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Ile Met Arg Asn Arg Gln Gln Ile Gly Glu Lys Lys Ile Leu Met Phe 100 105 110

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Met Phe Asn Gly Gly Met Arg Glu Lys Ser Ser Ser Ser Pro Ser Ser 145 150 155 160

Ser Gly Val Ser Gly Ile Glu Gln Ser Arg Arg Asp Ser Leu Ile Pro 165 170 175

Gln Leu Val Asn Asn Ser Glu Gly Ser Ser Leu His Arg Glu Asp Pro 180 185 190

Ser Gln Phe Gly Asp Val Leu Gln Glu Ala Pro Ile Glu Asp Ala Lys 195 200 205

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Lys Glu Ser Ala Arg Leu Gln Thr Val Asn Arg Lys Leu Ser Ala Met 85

Asn Lys Leu Leu Met Glu Glu Asn Asp Arg Leu Gln Lys Gln Val Ser

Asn Leu Val Tyr Glu Asn Gly Phe Met Lys His Arg Ile His Thr Ala 125

Ser Gly Thr Thr Asp Asn Ser Cys Glu Ser Val Val Ser Gly 130 135 140 Gln Gln Arg Gln Gln Gln Asn Pro Thr His Gln His Pro Gln Arg Asp 150 Val Asn Asn Pro Ala Asn Leu Leu Ser Ile Ala Glu Glu Thr Leu Ala 170 Glu Phe Leu Cys Lys Ala Thr Gly Thr Ala Val Asp Trp Val Gln Met Ile Gly Met Lys Pro Gly Pro Asp Ser Ile Gly Ile Val Ala Val Ser Arg Asn Cys Ser Gly Ile Ala Ala Arg Ala Cys Gly Leu Val Ser Leu Glu Pro Met Lys Val Ala Glu Ile Leu Lys Asp Arg Pro Ser Trp Phe Arg Asp Cys Arg Cys Val Glu Thr Leu Asn Val Ile Pro Thr Gly Asn 250 Gly Gly Thr Ile Glu Leu Val Asn Thr Gln Ile Tyr Ala Pro Thr Thr Leu Ala Ala Arg Asp Phe Trp Thr Leu Arg Tyr Ser Thr Ser Leu Glu Asp Gly Ser Tyr Val Val Cys Glu Arg Ser Leu Thr Ser Ala Thr 295 Gly Gly Pro Asn Gly Pro Leu Ser Ser Phe Val Arg Ala Lys Met 310 Leu Ser Ser Gly Phe Leu Ile Arg Pro Cys Asp Gly Gly Ser Ile 330 Ile His Ile Val Asp His Val Asp Leu Asp Val Ser Ser Val Pro Glu Val Leu Arg Pro Leu Tyr Glu Ser Ser Lys Ile Leu Ala Gln Lys Met 360 Thr Val Ala Ala Leu Arg His Val Arg Gln Ile Ala Gln Glu Thr Ser 370 Gly Glu Val Gln Tyr Ser Gly Gly Arg Gln Pro Ala Val Leu Arg Thr 390 395 Phe Ser Gln Arg Leu Cys Arg Gly Phe Asn Asp Ala Val Asn Gly Phe Val Asp Asp Gly Trp Ser Pro Met Ser Ser Asp Gly Glu Asp Ile 420 425

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730

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Asp Glu Lys Glu Gln Arg Arg Val Glu Arg Val Leu Arg Asn Arg Arg
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Glu Val Glu Lys Arg Ala Ile Glu Arg Lys Asn Met Asp Leu Glu Met 130 135 140

Arg Leu Ala Asp Met Glu Ala Lys Tyr Tyr Leu Leu Gln Gln Glu Leu 145 150 155 160

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